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MD/OSA

	ENGINEERING STUDY [ ] CHANGE PROPOSAL [X]	LAC - 137 - 1
DATE 26 NOVEMBER 1963	AFFECTS: WSPO [ ]	PROJECT [X]

NAME OF MAJOR COMPONENT	PART OR LOWEST SUBASSEMBLY	PART NO. & MODEL OR TYPE
OXYGEN SYSTEM	SEAT PACK	Q-445

TITLE OF PROPOSAL: IMPROVED SEAT PACK ASSEMBLY

NATURE OF PROPOSAL:

SEE PAGE 2

REASON FOR PROPOSAL:

1. TO INCORPORATE IMPROVED SEAT PACK DEPLOYMENT AND LIFE RAFT INFLATION PROVISIONS.
2. TO INCORPORATE THIGH STRAP, HARNESS AND KIT TO MAN QUICK DISCONNECT.
3. TO INCORPORATE AN IMPROVED SHIP TO KIT DISCONNECT COUPLING WITH AUTOMATIC GREEN APPLE ACTUATION.
4. TO INCORPORATE FIBERGLASS SURVIVAL GEAR CONTAINER.

ES	ESTIMATED COST AND TIME INVOLVED:	
	ADDITIONAL FUNDING REQUIRED:	
CP	ESTIMATED COST FOR KITS OR PARTS:	See Pages 2 and 3
	ADDITIONAL FUNDING REQUIRED:	See Page 3

ITEMS AFFECTED BY PROPOSAL:

SAFETY	MISSION EFFECTIVENESS	PERFORMANCE	OPERATING PROCEDURE	INTERCHANGEABILITY	WEIGHT OR WEIGHT & BALANCE	TOOLS & SUPPORT EQUIPMENT	MAINTENANCE PROCEDURE	SERVICE LIFE	FLIGHT MANUAL	MAINTENANCE MANUAL
[X]	[X]	[ ]	[X]	[X]	[ ]	[ ]	[X]	[ ]	[X]	[X]

EST. MAN/HRS. REQ'D. TO ACCOMPLISH CHANGE IN FIELD

SOURCE OF PARTS FOR KIT LAC	AVAILABILITY - WEEKS AFTER APPROVAL See Page 4

DISPOSITION OF SPARES AFFECTED

DETAIL LIST WILL FOLLOW WITH APPROVAL OF THIS EC

6 MAY 64

INITIATED BY: CUSTOMER FUNDS OK	APPROVED: 6 MAY 64

STAT

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SP-E-1A

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NATURE OF PROPOSAL:

1. Replace the present Q-207 seat packs with production Q-445 seat packs described in Attachment #1.

   NOTE: A summary of Proposal changes affecting seat pack has been added to Attachment #1.

2. Modify the aircraft by replacing the existing disconnect on the side of the oxygen console with a hose and disconnect (half) assembly on the left-hand side of the seat to mate with the Q-445 seat pack. Wiring changes per S/B 479 are compatible.

3. Modify the ejection seat assembly by relocating the back shelf to accomodate the new pack as well as the existing pack, and re-route the lap belt initiator hose to a more desirable position. Replace the Q-426 track latch housing.

   NOTE: This modification may be accomplished either at IRAN or in the field.

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GFE LIST

The parts listed below should be part of the Q207 Seat Packs that are returned for disassembly.

F2050-11	Regulator	1 Required
F2400-6	Regulator	1 "
F9025-7	Tester	1 "
F46400-13	Relief Valve	1 "
L-2	Gage	1 "

SCHEDULE

2 Each 75 Days Balance 3 each per week till completion, depending upon availability of GFE Q-207 Seat Pack which must be at LAC 60 days prior to delivery of Q-445 with re-usable components.

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IMPROVED SEAT PACK (Q-445)

The Q-445 Seat Pack design incorporated developments considered essential based on conclusive service experience with existing seat packs. While the basic oxygen system components are unchanged except for location, the container, disconnects, and deployment sequences have been improved to provide increased reliability.

DESCRIPTION OF PACK

Packaging -

A fiberglass container, consisting of two parts, houses the oxygen system, the life raft and the survival gear container. The upper part contains the complete oxygen installation, including controls and disconnect. The present contour top is retained with the addition of front extensions for more comfortable leg supports, and an extension at the back to provide parachute support. The lower part will contain the survival gear container and life raft. The survival gear, excluding life raft, will be packed in a waterproof bag usable as a rucksack. The life raft will be stowed separately from the survival gear container bag in the pack.

The contour top will be substantially parallel to the bottom. The height of the container will be as has been determined previously to provide proper canopy clearance for taller pilots and may be blocked up to accomodate shorter pilots.

Oxygen System -

Reduced pressure oxygen is directed from the airplane system through the ship to pack disconnect. An emergency source of 96 cu. in. oxygen is supplied which is 1.7 times that in the system now in use in the existing Q-207 packs.

Quick Disconnects -

The Q-445 oxygen system incorporates two disconnects. The first disconnects the pack from the ships oxygen supply and at the same time automatically activates the emergency oxygen supply in the pack. The second disconnect will free the mask and suit hoses from the pack as the first operation in the sequence initiated by operation of the release handle controlling deployment of the kit.

Release System -

A grip type release handle with trigger is provided on the right-hand side of the seat pack, replacing the zipper pull tab on the Q-207 pack. Gripping action on this handle followed by pulling the handle off the seat pack initiates the following sequence:

1. Seat Ejection Bailout
   a. Release of mask and suit hoses from the seat pack
   b. Release of the lock which secures the halves of the fiberglass container together.
   c. Release of the side strap adjusters and leg strap attachments. The lanyard connected to the life raft and survival gear container remains attached to the left side strap adjustor when the ship to pack disconnect has been separated by seat ejection.

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Release System (Continued)

d. The upper part of the fiberglass container separates and falls away with the emergency oxygen supply, leaving the survival gear container, CO_2 bottle, and life raft (inflates) connected by lanyard to the crewman.

2. Emergency Ground Egress

The sequence following the operation of the release handle is the same as in seat ejection except that the ship to pack disconnect remains engaged causing the life raft and survival gear lanyard to separate from the left side strap adjuster, leaving the crewman completely free of the seat pack which stays in the seat.

The hardware in the deployment and release systems will be similar to the hardware previously used in the Q-207 and [illegible] prototype seat packs but will utilize stronger materials for certain critical parts.

Summary of Proposed Changes -

1. The contoured top of the fiberglass container will be substantially parallel to the bottom. The height has been established to provide canopy clearance for taller pilots. (Previous proposal described two nesting parts of lower container assembly to provide acustom container height to be established at the time of packing)(included in XQ-445 prototype, but will not be part of regular production).

2. Stronger materials are to be utilized for certain critical parts in the pack deployment and release systems. (Included in XQ-445 prototype.)

3. The quick disconnect from the ships oxygen system to the seat pack used to automatically activate the emergency oxygen supply in the pack will be redesigned to eliminate the roll pins installed in the pip pin assemblies. (Not included in XQ-445 prototype.)

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